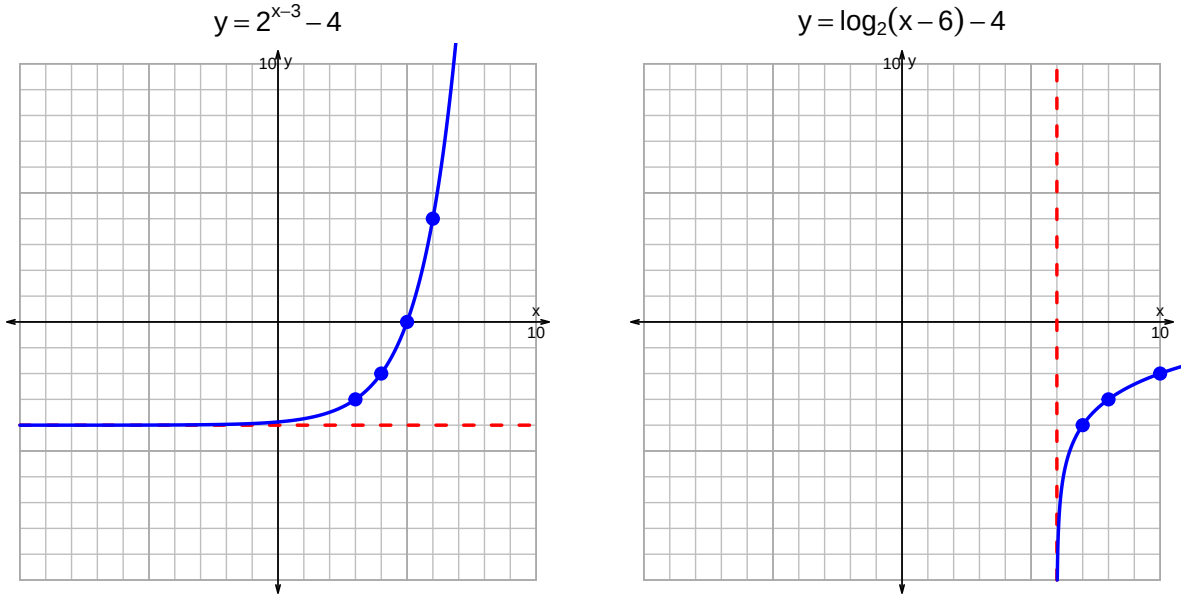
Name: Date:

## s18quiz: EXP LOG (Solution v3)

1. Graph $y = 2^{x-3} - 4$ and $y = \log_2(x-6) - 4$ on the grids below. Also, draw any asymptotes with dotted lines.




2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{4}{5}\right) \cdot 10^{7t/3}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{13 \cdot 5}{4} = 10^{7t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 5}{4}\right) = \frac{7t}{3}$$

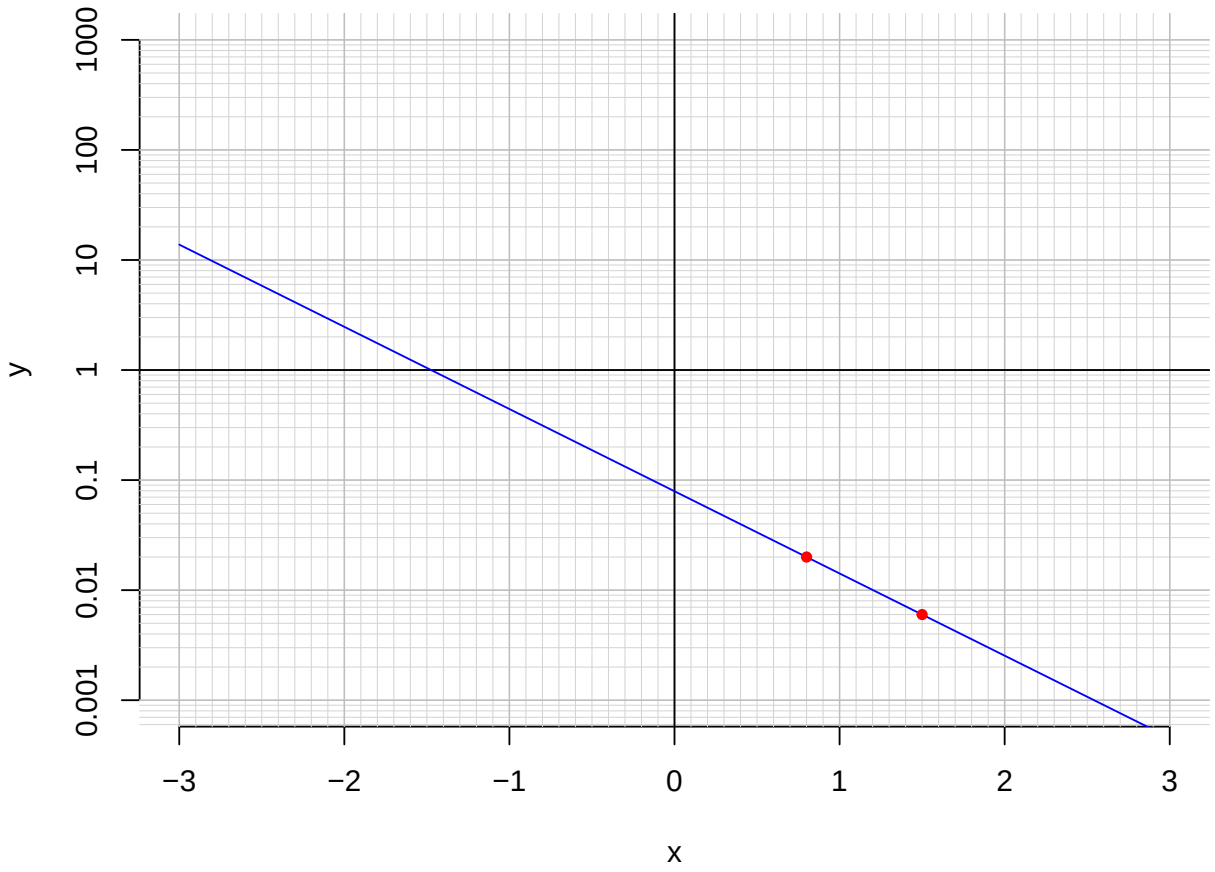
Divide both sides by $\frac{7}{3}$.

$$\frac{3}{7} \cdot \log_{10}\left(\frac{13 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_{10}\left(\frac{13 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 0.0792 \cdot e^{-1.72x}$ is graphed below on a semi-log plot.




a. Using the plot above, evaluate $f(1.5)$.

$$f(1.5) = 0.006$$

b. Express $f^{-1}(x)$, the inverse of $f$.

$$f^{-1}(x) = \frac{-1}{1.72} \cdot \ln\left(\frac{x}{0.0792}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.02)$.

$$f^{-1}(0.02) = 0.8$$